

WE CLAIM AS OUR INVENTION:

1. A medical examination/treatment system comprising:
an x-ray image acquisition system comprising an x-ray source, an x-ray receiver disposed to receive x-rays from said x-ray source, and a control and processing device for controlling the x-ray source and the x-ray receiver, said control and processing device generating an x-ray image from signals from said x-ray receiver;
a catheter system associated with an optical coherence tomography (OCT) image acquisition system, comprising a catheter with an optical fiber therein for guiding light from said OCT image acquisition system to a region of a tip of the catheter and for radiating the light from said region into an examination region at which reflection light is produced, and for guiding said reflection light from said region of the tip to a control and processing device of said OCT image acquisition system for generating an OCT image from said reflection light; and
at least one monitor at which said x-ray image and said OCT image are presented.
2. A medical examination/treatment system as claimed in claim 1 wherein said at least one monitor displays said x-ray image and said OCT image together.
3. A medical examination/treatment system as claimed in claim 2 wherein said at least one monitor is a single monitor at which said x-ray image and said OCT image are displayed superimposed.
4. A medical examination/treatment system as claimed in claim 1 wherein said control and processing device of said x-ray image acquisition system and said control and processing device of said OCT image acquisition system share a single

image generator, and wherein said single image generator generates both said x-ray image and said OCT image.

5. A medical examination/treatment system as claimed in claim 1 wherein said catheter comprises a magnetic field-generating element disposed at said tip, and wherein said catheter system comprises a magnetic field generator that generates a magnetic field externally of said examination region that interacts with the magnetic field generated by said element to move said catheter relative to said examination region.

6. A medical examination/treatment system as claimed in claim 5 wherein said catheter system comprises a control unit for controlling at least one of said magnetic field generated by said element and said external magnetic field.

7. A medical examination/treatment system as claimed in claim 6 wherein said control and processing device of said x-ray image acquisition system, said control and processing device of said OCT image acquisition system, and said control unit of said catheter system are integrated into a single control device.

8. A medical examination/treatment system as claimed in claim 6 wherein said control device of said catheter system varies a strength of the magnetic field generated by said element.

9. A medical examination/treatment system as claimed in claim 8 wherein said magnetic field-generating element comprises an electromagnet having a core and a coil, and wherein said catheter comprises supply lines connecting said control device of said catheter system to said coil.

10. A medical examination/treatment system as claimed in claim 9 wherein said electromagnet is a first electromagnet, and wherein said catheter comprises a second magnetic field-generating element comprising a second electromagnet

having a core and a coil, and wherein said catheter comprises second supply lines connecting said second electromagnet to said control device of said catheter system.

11. A medical examination/treatment system as claimed in claim 10 wherein said control device of said catheter system selectively controls said first and second electromagnets individually or in common.

12. A medical examination/treatment system as claimed in claim 5 wherein said catheter has a longitudinal axis, and wherein said magnetic field-generating element generates said magnetic field at said tip in a direction substantially parallel to said longitudinal axis.

13. A medical examination/treatment system as claimed in claim 5 wherein said catheter has a longitudinal axis, and wherein said magnetic field-generating element generates said magnetic field at said tip in a direction substantially perpendicular to said longitudinal axis.

14. A medical examination/treatment system as claimed in claim 5 wherein said catheter has a longitudinal axis, and wherein said magnetic field-generating element is a first magnetic field-generating element that generates a first magnetic field substantially parallel to said longitudinal axis, and wherein said catheter comprises a second magnetic field-generating element, also disposed at said tip, that generates a second magnetic field substantially perpendicular to said longitudinal axis.

15. A medical examination/treatment system as claimed in claim 5 wherein said catheter comprises a permanent magnet element disposed in the region of said tip.

16. A medical examination/treatment system as claimed in claim 5 wherein said catheter system comprises a catheter control device connected to said

magnetic field-generating element for varying the magnetic field generated by said magnetic field-generating element, and an external magnetic field control device for controlling said external magnetic field, and wherein said catheter system comprises a communication path between said catheter control device and said external magnetic field control device, and wherein said catheter control device controls said magnetic field generated by said magnetic field-generating element dependent on information supplied thereto by said external magnetic field control device regarding said external magnetic field.

17. A medical examination/treatment system as claimed in claim 1 wherein said optical fiber terminates in an end face adapted to radiate said light into said examination region from at least one location selected from the group consisting of sideways from said tip and forward from said tip.

18. A medical examination/treatment system as claimed in claim 1 wherein said control and processing device of said x-ray image acquisition system and said control and processing device of said OCT image acquisition system are integrated into a single control device.